

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P929234

Luminaire Tested: DFN2DIP-HX4F0-060D090US940-RLLONL

Issue Date: 12/12/2024

**Test Information**

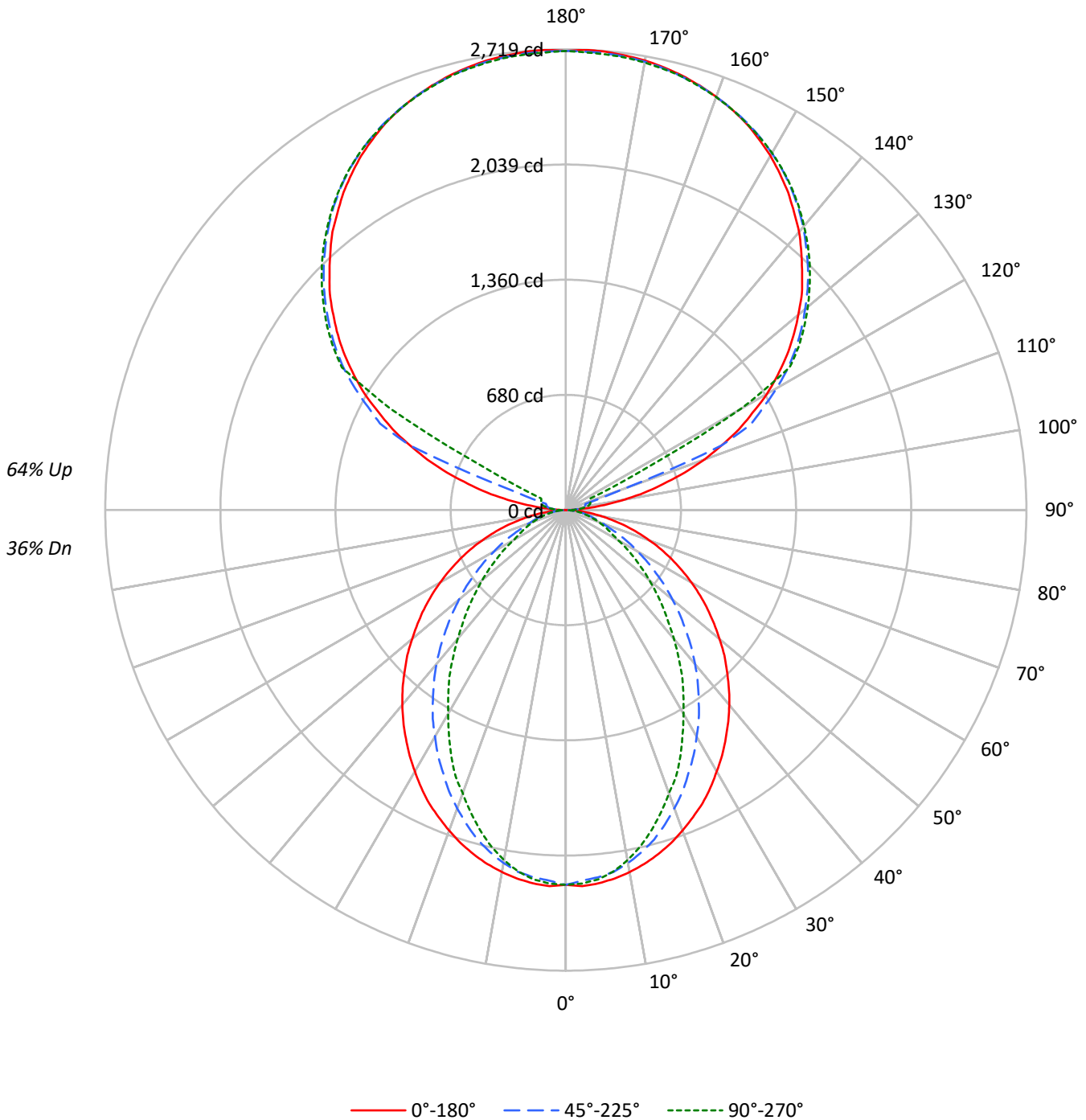
Test Method: LM-79-2019  
Report Number: P929234  
REPORT IS A COMBINATION OF REPORTS P900914 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-060D090US940-RLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12496.9 lumens  
Efficiency: N/A  
Efficacy: 102.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 122.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	104	104	104	104	94	94	94	94	76	76	76	59	59	59	44	44	44	36				36
1	95	91	87	84	86	83	80	77	67	65	63	52	51	50	39	38	38	31				31
2	87	80	74	69	78	73	68	63	59	56	53	46	44	42	35	33	32	27				27
3	79	70	63	58	72	64	58	53	52	48	45	41	38	36	31	29	28	23				23
4	73	63	55	49	66	57	51	46	47	42	38	37	34	31	28	26	24	20				20
5	67	56	48	42	60	51	44	39	42	37	33	33	30	27	25	23	21	18				18
6	62	50	42	37	56	46	39	34	38	33	29	30	27	24	23	21	19	16				16
7	57	45	38	32	52	41	35	30	34	29	26	28	24	21	21	19	17	14				14
8	53	41	34	29	48	38	31	27	31	26	23	25	22	19	20	17	15	13				13
9	49	37	30	25	45	34	28	24	29	24	20	23	20	17	18	16	14	12				12
10	46	34	27	23	42	32	25	21	26	22	18	22	18	15	17	14	13	11				11

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	1645	1645	1645
5°	1648	1619	1629
10°	1631	1587	1576
15°	1609	1535	1494
20°	1579	1463	1394
25°	1549	1382	1297
30°	1508	1299	1174
35°	1469	1210	1065
40°	1428	1117	941
45°	1381	1015	829
50°	1332	911	719
55°	1281	801	614
60°	1222	685	505
65°	1155	567	455
70°	1073	458	412
75°	970	404	375
80°	820	339	325
85°	573	227	245

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1390 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	207.3	1.7
10°-20°	569.1	4.6
20°-30°	799.0	6.4
30°-40°	871.0	7.0
40°-50°	800.5	6.4
50°-60°	628.7	5.0
60°-70°	409.2	3.3
70°-80°	210.6	1.7
80°-90°	58.5	0.5
90°-100°	89.3	0.7
100°-110°	333.0	2.7
110°-120°	883.3	7.1
120°-130°	1465.0	11.7
130°-140°	1556.2	12.5
140°-150°	1446.3	11.6
150°-160°	1162.8	9.3
160°-170°	749.2	6.0
170°-180°	257.9	2.1
0°-30°	1575.4	12.6
0°-40°	2446.4	19.6
0°-60°	3875.6	31.0
0°-90°	4554.0	36.4
90°-120°	1305.7	10.4
90°-150°	5773.1	46.2
90°-180°	7943.0	63.6
0°-180°	12496.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2212	2212	2212	2212	2212	
5°	2212	2202	2176	2194	2188	210
15°	2104	2082	2014	1976	1956	593
25°	1910	1846	1714	1632	1601	878
35°	1646	1543	1367	1241	1197	1030
45°	1345	1211	1001	859	811	1039
55°	1023	867	650	531	492	914
65°	691	528	348	280	274	685
75°	368	228	160	146	144	390
85°	86	44	38	38	38	99
90°	2	24	39	49	53	12
95°	127	63	76	86	84	151
105°	596	655	120	141	149	637
115°	1127	1160	1210	302	161	1110
125°	1594	1619	1657	1670	1676	1421
135°	1972	2004	2021	2041	2037	1524
145°	2288	2286	2319	2333	2323	1431
155°	2519	2502	2525	2537	2521	1161
165°	2654	2643	2649	2662	2649	750
175°	2715	2701	2705	2719	2700	258
180°	2709	2709	2709	2709	2709	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2212.0	2212.0	2212.0	2212.0	2212.0
2.5°	2222.0	2212.0	2189.9	2210.0	2206.0
5°	2212.0	2202.0	2175.9	2194.0	2188.0
7.5°	2194.0	2182.0	2154.0	2161.9	2151.9
10°	2169.9	2155.9	2116.0	2109.8	2097.9
12.5°	2140.0	2121.9	2067.7	2055.9	2033.8
15°	2103.9	2081.7	2013.8	1975.8	1955.8
17.5°	2061.9	2029.7	1945.6	1901.7	1869.6
20°	2013.8	1973.6	1873.6	1823.7	1779.5
22.5°	1961.8	1915.7	1799.5	1731.6	1701.6
25°	1909.8	1845.6	1713.5	1631.6	1601.4
27.5°	1847.8	1779.5	1633.4	1539.3	1493.3
30°	1781.7	1705.4	1545.3	1443.3	1389.2
32.5°	1717.5	1625.4	1461.5	1341.2	1291.1
35°	1645.6	1543.4	1367.3	1241.1	1197.0
37.5°	1575.5	1465.2	1279.2	1141.0	1091.0
40°	1501.3	1381.4	1187.0	1044.9	992.9
42.5°	1425.3	1297.2	1095.0	946.8	896.9
45°	1345.2	1211.0	1001.0	858.6	810.6
47.5°	1269.2	1127.1	910.9	768.6	724.7
50°	1185.1	1043.0	822.8	684.5	642.7
52.5°	1102.9	952.7	738.7	606.6	568.6
55°	1022.9	866.8	650.5	530.6	492.5
57.5°	940.9	780.7	572.6	460.5	428.3
60°	856.8	696.7	490.4	388.5	356.4
62.5°	774.8	614.7	420.3	324.3	308.4
65°	690.7	528.4	348.3	280.4	274.2
67.5°	610.6	448.3	280.4	246.2	240.2
70°	526.5	370.4	232.1	212.2	204.1
72.5°	446.4	298.2	194.1	178.2	174.1
75°	368.3	228.1	160.1	146.1	144.2
77.5°	290.3	162.1	126.1	118.1	114.1
80°	218.1	116.1	96.0	88.1	88.1
82.5°	152.1	78.1	66.0	62.0	62.0
85°	86.0	44.0	38.0	38.0	38.0
87.5°	32.1	16.0	16.0	14.0	14.0
90°	1.9	23.5	39.1	49.1	52.8
92.5°	49.1	41.2	47.0	51.0	52.8
95°	127.4	62.6	76.4	86.3	84.3
97.5°	229.3	68.7	99.9	105.9	107.8
100°	347.1	78.5	111.8	127.4	131.3
102.5°	476.3	472.6	115.7	137.1	143.2
105°	595.9	654.9	119.6	141.1	149.0
107.5°	735.2	784.1	123.6	145.0	153.0
110°	868.5	909.6	343.2	147.1	154.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	994.0	1029.2	995.9	150.8	156.9
115°	1127.2	1160.5	1209.6	301.9	160.8
117.5°	1242.9	1282.1	1315.5	1035.1	521.5
120°	1372.3	1401.7	1437.1	1460.6	1195.9
122.5°	1482.1	1513.5	1552.8	1564.4	1566.5
125°	1593.7	1619.3	1656.6	1670.4	1676.2
127.5°	1695.7	1723.2	1752.8	1772.3	1774.2
130°	1791.8	1823.3	1844.7	1866.3	1864.5
132.5°	1889.9	1915.5	1936.9	1954.6	1952.8
135°	1972.3	2003.7	2021.2	2041.0	2037.1
137.5°	2058.5	2081.9	2101.7	2121.3	2115.5
140°	2142.7	2158.6	2180.0	2197.6	2187.9
142.5°	2213.5	2227.2	2252.6	2268.2	2258.5
145°	2288.0	2285.8	2319.2	2332.9	2323.1
147.5°	2352.5	2346.7	2379.9	2389.8	2382.0
150°	2415.4	2401.6	2433.0	2444.6	2434.9
152.5°	2468.2	2452.6	2481.9	2493.8	2480.0
155°	2519.2	2501.7	2525.2	2536.8	2521.2
157.5°	2560.4	2544.8	2562.4	2576.2	2560.4
160°	2595.7	2583.9	2595.7	2607.4	2593.7
162.5°	2626.9	2615.3	2625.1	2638.8	2621.1
165°	2654.4	2642.7	2648.6	2662.4	2648.6
167.5°	2676.1	2664.2	2670.2	2683.9	2666.3
170°	2693.8	2681.9	2685.8	2699.5	2681.9
172.5°	2705.4	2693.8	2697.7	2711.4	2693.8
175°	2715.2	2701.4	2705.4	2719.1	2699.5
177.5°	2719.1	2705.4	2707.5	2721.2	2703.6
180°	2709.4	2709.4	2709.4	2709.4	2709.4



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**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	7.46	8.19	8.53	9.26	10.72	3.44	4.17	4.51	5.23	6.69
	3H	9.13	9.79	10.21	10.86	12.34	4.62	5.27	5.70	6.35	7.82
	4H	9.74	10.36	10.83	11.44	12.91	5.06	5.68	6.16	6.76	8.24
	6H	10.15	10.72	11.25	11.81	13.30	5.38	5.95	6.48	7.03	8.53
	8H	10.28	10.82	11.38	11.92	13.40	5.47	6.01	6.58	7.11	8.60
	12H	10.34	10.85	11.45	11.94	13.45	5.51	6.03	6.62	7.12	8.63
4H	2H	7.47	8.09	8.57	9.17	10.65	4.02	4.64	5.12	5.72	7.20
	3H	9.29	9.80	10.39	10.91	12.40	5.36	5.88	6.47	6.98	8.47
	4H	9.98	10.45	11.09	11.55	13.06	5.91	6.38	7.02	7.48	8.99
	6H	10.49	10.89	11.61	12.01	13.52	6.32	6.73	7.44	7.85	9.35
	8H	10.66	11.04	11.78	12.15	13.67	6.45	6.83	7.57	7.94	9.46
	12H	10.75	11.10	11.89	12.22	13.75	6.51	6.85	7.65	7.98	9.50
8H	4H	9.94	10.32	11.06	11.43	12.95	6.18	6.56	7.30	7.67	9.19
	6H	10.50	10.81	11.64	11.97	13.49	6.70	7.01	7.83	8.16	9.68
	8H	10.72	10.99	11.86	12.13	13.66	6.89	7.16	8.03	8.30	9.83
	12H	10.85	11.09	12.00	12.22	13.80	7.01	7.24	8.15	8.37	9.95
12H	4H	9.89	10.23	11.02	11.35	12.88	6.18	6.52	7.31	7.65	9.17
	6H	10.48	10.75	11.62	11.88	13.42	6.75	7.02	7.89	8.15	9.69
	8H	10.69	10.93	11.84	12.06	13.64	6.95	7.19	8.10	8.32	9.90